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#### [57] ABSTRACT

A method of contacting a substrate having a surface containing hydroxyl groups with a non-aqueous solution containing a material having a chlorosilyl group; washing if desired; coating the substrate with a non-aqueous solvent containing a compound having a fluorocarbon group and a chlorosilane group or a solvent containing a compound containing a fluorocarbon group and an alkoxysilane; and baking the substrate if necessary in order to form a fluorocarbon-based polymer coating film chemically bonded to the substrate surface. The hydroxyl groups on the substrate surface and chlorosilyl groups are reacted to form a thin film having a large number of silanol groups ( $-\text{SiOH}$ ) capable of connecting the polymer coating film to the substrate to form a heat-, weather-, and wear-resistant film on various surfaces.

11 Claims, 6 Drawing Sheets